



Figure 9 National Network Overlaid on the Model TAZs

Line Layer Connectivity

The network is ready for assignment only if there are no discontinuities. Hence, it is essential to edit the network prior to assignment. The NHPN network is exported from an ArcGIS shapefile to a TransCAD shapefile. The network is then checked for its connectivity in TransCAD. A threshold level of 100 meters is used for checking the connectivity of the network. A total of about 500 errors categorized into three levels indicating the level of discontinuity in the digitized network occurred. The errors generally reflected discontinuities in minor roads and roads terminated at the North Carolina state line. All the errors were manually corrected to make the network ready for assignment.

Future updates to the network should add post-2005 NCDOT highway improvement projects like bypasses and highway widenings (lane additions).

Centroids and Centroid Connectors

To perform the network assignment in TransCAD, all the TAZs have to be associated with a centroid which indicates where the flows to and from a TAZ are centered. All the TAZ flows are thus loaded at the centroids. Centroid connectors are network links which connect a TAZ centroid to the model network. The centroid links may be actual minor roads as in low density county and BEA TAZs, or imaginary links in dense metro TAZs. Centroids and centroid connectors are automatically created using TransCAD. Once all the centroids are ready, centroid IDs are matched to the corresponding TAZ IDs to perform the network assignment.

The automatic TransCAD function for designing centroid connectors is convenient and efficient. It is widely used in practice. For this NC truck network model the “imaginary” centroid connectors formed in the less significant buffer and external zones are likely adequate especially after manual adjustments such as orienting connectors toward US routes or other major highways. Within North Carolina the automatic centroid connector links should be more carefully examined in future research. Issues for consideration